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Application Number	10/018,319
Filing Date	04/25/2002
First Named Inventor	Manfred Stefener
Art Unit	1746
Examiner Name	Crepeau, Jonathan
Attorney Docket Number	GRUNP17

Total Number of Pages in This Submission: 9

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
- ☐ Fee Attached
- ☐ Amendment/Reply
- ☐ After Final
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	IP Strategies Thomas M. Champagne
Signature	
Date	01/16/2007

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Signature		Date	01/16/2007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application No.	Filing Date	First Named Inventor	Atty. Docket No.	Confirmation No.
10/018,319	04/25/2002	Manfred Stefener	GRUNP17	1648

Invention	Examiner	Art Unit
Fuel Cell System and Fuel Cell Therefor	Crepeau, Jonathan	1746

REPLY BRIEF

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Sir:

This is a Reply Brief in response to the Examiner's Answer dated November 27, 2006.

Status of the claims is listed on page 2;

Grounds of rejection to be reviewed on appeal are presented on page 3;

Arguments begin on page 4;

STATUS OF THE CLAIMS

This application was submitted on November 13, 2001, with claims 1-99. The following shows the current status of the claims.

1-22. Canceled.

23-29. Rejected.

30-73. Canceled.

74-75. Rejected.

76-99. Canceled.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 23-29, 74, and 75 are unpatentable under 35 USC §103(a) over Lessing et al. (U.S. Patent 5,641,585), in view of Kelly et al. (U.S. Patent 6,268,077), Gamo et al. (U.S. Patent 5,976,725), or Jankowski et al. (U.S. Patent 6,638,654).

ARGUMENT

This is a reply to the Examiner's Answer, in particular to the examiner's response to the appellants' argument in the Appeal Brief, set forth in Section 10 of the Examiner's Answer.

In the Answer, the examiner stated that the appellants have not offered support for the assertion that the teachings of the secondary references are not compatible with the teachings of Lessing et al. It is respectfully pointed out that, in making a *prima facie* case of obviousness, it is the examiner's burden to show compatibility. That is, the examiner must show that there is a reasonable expectation of success in combining the teachings of the references in an attempt to render obvious the claimed invention. *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976). It is submitted that the examiner has not shown a reasonable expectation of success, and has not demonstrated that the teachings of the secondary references are compatible with the teachings of Lessing et al.

As noted by the examiner, Lessing et al. teach a miniature ceramic fuel cell that is supported on a consumer device such as a mobile telephone. Both the fuel and ambient air are pumped to the fuel cell using pumps. The fuel is contained in a tank that is mounted on the consumer.

Kelley et al. disclose a portable power supply that includes a fuel storage means 110. As pointed out by the examiner, Kelley et al. disclose that the fuel delivery means 120 can be coupled to the fuel storage means 110 by a miniature quick disconnect 130. The fuel delivery means 130 is a device that controls the flow and/or pressure of a gas, such as a mechanical micro pressure regulator that is designed to operate with an output

pressure less than ten pounds per square inch, or a micro-machined regulator made from a silicon chip. This regulator is used because the hydrogen gas in the fuel storage means 110 must be pressurized. See Kelley et al. column 3, lines 20-30. In contrast, Lessing et al. use hydrocarbon fuels, and require the use of a fuel pump 22 to get the fuel from the fuel tank 18 into the power chamber 34. See Lessing et al. column 4, lines 42-49. It is not clear how a quick-disconnect device coupling a fuel storage means holding pressurized hydrogen gas to an electro-mechanical device can be successfully used to couple a fuel tank holding a hydrocarbon fuel to a fuel pump. These are clearly different devices that have different requirements. The examiner has not provided an explanation of how this substitution can be successfully accomplished, and it is submitted that such a substitution would require modification constituting an inventive step that would not be obvious to one of skill in the art.

Likewise, Gamo et al. disclose a portable battery pack using a fuel cell system, in which pressurized hydrogen gas is stored as fuel in a hydrogen occlusion alloy container 2. The container is coupled to a pressure regulator 5 used as a hydrogen pressure control mechanism by a connection portion 3 through a piping 6a. See Gamo et al. column 4, lines 20-42. The connection portion 3 has a structure for detaching the hydrogen occlusion alloy container 2 from the piping 6a so that the hydrogen occlusion alloy container 2 can be replaced, as noted by they examiner. However, as noted above, Lessing et al. use hydrocarbon fuels, and require the use of a fuel pump 22 to get the fuel from the fuel tank 18 into the power chamber 34. See Lessing et al. column 4, lines 42-49. Again, it is not clear how a detachable connection portion coupling a hydrogen

occlusion alloy container holding pressurized hydrogen gas to a regulator can be successfully used to couple a fuel tank holding a hydrocarbon fuel to a fuel pump. These are clearly different devices that have different requirements. The examiner has not provided an explanation of how this substitution can be successfully accomplished, and it is submitted that such a substitution would require modification constituting an inventive step that would not be obvious to one of skill in the art.

Jankowski et al. discloses a micro-electro-mechanical systems (MEMS)-based thin-film fuel cell, that is, a thin-film miniature fuel cell with microflow channels and fully-integrated control circuitry. The miniature fuel cells of this invention can be either solid oxide or solid polymer or proton exchange membrane electrolyte materials, and can also utilize catalyst layers between the electrodes and the electrolyte. Stacks of the thin-film fuel cells can be produced to provide a compact power source. See Jankowski et al. column 2, lines 9-22. The fuel cell includes microflow channels and manifolding micromachined into the host structure/substrate, and can utilize integrated microvalves, resistive heaters, or other means to control the flow of fuel to the fuel cell stack. As noted by the examiner, the MEMS-based fuel cell may incorporate a fuel reservoir as a modular cartridge that can be easily replaced or recharged. It is also disclosed that some form of valve can be placed in the micro-flow channels as a means of controlling the flow of fuel to the stack. See Jankowski et al. column 2, line 60 through column 3, line 26. Jankowski et al. do not disclose exactly how the connection of the modular cartridge can be accomplished, and further does not disclose any details of the connection of the fuel reservoir to the fuel cell at all. In any case, the thin-film fuel cell stack disclosed by

Jankowski et al. is quite different than the miniature ceramic fuel cell disclosed by Lessing et al. There is no teaching or suggestion in either of the references that would allow one of skill in the art to apply the modular cartridge of the Jankowski et al. thin-film fuel cell stack, which must make some connection to the micro-flow channels, to the fuel tank of the Lessing et al. ceramic fuel cell, which is connected to a fuel pump.

In summary, all of the secondary references disclose replaceable fuel reservoirs of some type. However, none of the secondary references provides the teaching or suggestion that the respective replaceable fuel reservoir is compatible with the Lessing et al. system absent modification of an inventive nature. Jankowski et al. in particular provides no disclosure at all that could be reasonably asserted to teach how the modular cartridge is connected in that very reference.

With respect to claims 26 and 27, the examiner asserted for the first time that Lessing et al. disclose a pump on the consumer side. However, claim 26 recites a pump device provided on the consumer side, for supporting a supply of the oxidising agent to the fuel cell device, and claim 27 recites that the supply of the oxidising agent is essentially supplied by the pump device. The examiner has not addressed all of the elements of these claims, only the existence of a pump.. It is not clear whether Lessing et al. provide or suggest supplying an oxidizing agent by a pump device on the consumer side.

With respect to claims 24, 28, 74, and 75, the examiner has not demonstrated that Lessing et al. discloses pumps that have the capability to be controlled in the claimed manner.

Based on the foregoing, it is submitted that all rejections have been overcome. It is therefore requested that the claims be allowed, and the case passed to issue.

Respectfully submitted,

January 16, 2007
Date

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